

# **Instrument Control Toolbox Release Notes**

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## Summary by Version

This table provides quick access to what is new in each version. For clarification, see “About Release Notes” on page 1.

| Version (Release)                     | New Features and Changes | Version Compatibility Considerations | Fixed Bugs and Known Problems | Related Documentation at Web Site                             |
|---------------------------------------|--------------------------|--------------------------------------|-------------------------------|---|
| <b>Latest Version V2.4.1 (R2006b)</b> | No                       | No                                   | Bug Reports                   | Printable Release Notes: PDF<br>Current product documentation |
| V2.4 (R2006a)                         | Yes<br>Details           | No                                   | Bug Reports                   | No  |
| V2.3 (R14SP3)                         | No                       | No                                   | Bug Reports                   | No  |
| V2.2 (R14SP2)                         | Yes<br>Details           | No                                   | Bug Reports                   | No  |
| V2.1.2 (R14SP1+)                      | No                       | No                                   | Fixed bugs                    | No  |
| V2.1 (R14SP1)                         | Yes<br>Details           | No                                   | Fixed bugs                    | No  |
| V2.0 (R14)                            | Yes<br>Details           | No                                   | Fixed bugs                    | No  |

### About Release Notes

Use release notes when upgrading to a newer version to learn about new features and changes, and the potential impact on your existing files and practices. Release notes are also beneficial if you use or support multiple versions.

If you are not upgrading from the most recent previous version, review release notes for all interim versions, not just for the version you are installing. For example, when upgrading from V1.0 to V1.2, review the New Features and Changes, Version Compatibility Considerations, and Bug Reports for V1.1 and V1.2.

## **New Features and Changes**

These include

- New functionality
- Changes to existing functionality
- Changes to system requirements (complete system requirements for the current version are at the MathWorks Web site)
- Any version compatibility considerations associated with each new feature or change

## **Version Compatibility Considerations**

When a new feature or change introduces a known incompatibility with the previous version, its description includes a **Compatibility Considerations** subsection that details the impact. For a list of all new features and changes that have compatibility impact, see the “Compatibility Summary for Instrument Control Toolbox” on page 17.

Compatibility issues that become known after the product has been released are added to Bug Reports at the MathWorks Web site. Because bug fixes can sometimes result in incompatibilities, also review fixed bugs in Bug Reports for any compatibility impact.

## **Fixed Bugs and Known Problems**

MathWorks Bug Reports is a user-searchable database of known problems, workarounds, and fixes. The MathWorks updates the Bug Reports database as new problems and resolutions become known, so check it as needed for the latest information.

Access Bug Reports at the MathWorks Web site using your MathWorks Account. If you are not logged in to your MathWorks Account when you link to Bug Reports, you are prompted to log in or create an account. You then can view bug fixes and known problems for R14SP2 and more recent releases.

The Bug Reports database was introduced for R14SP2 and does not include information for prior releases. You can access a list of bug fixes made in prior versions via the links in the summary table.

## **Related Documentation at Web Site**

**Printable Release Notes (PDF).** You can print release notes from the PDF version, located at the MathWorks Web site. The PDF version does not support links to other documents or to the Web site, such as to Bug Reports. Use the browser-based version of release notes for access to all information.

**Product Documentation.** At the MathWorks Web site, you can access complete product documentation for the current version and some previous versions, as noted in the summary table.

## Version 2.4.1 (R2006b) Instrument Control Toolbox

This table summarizes what is new in Version 2.4.1 (R2006b):

| <b>New Features and Changes</b> | <b>Version Compatibility Considerations</b> | <b>Fixed Bugs and Known Problems</b> | <b>Related Documentation at Web Site</b>                      |
|---------------------------------|---|--------------------------------------|---|
| No                              | No  | Bug Reports                          | Printable Release Notes: PDF<br>Current product documentation |



## Version 2.4 (R2006a) Instrument Control Toolbox

This table summarizes what is new in Version 2.4 (R2006a):

| New Features and Changes | Version Compatibility Considerations | Fixed Bugs and Known Problems | Related Documentation at Web Site |
|--------------------------|--------------------------------------|-------------------------------|-----------------------------------|
| Yes<br>Details below     | No                                   | Bug Reports                   | No                                |

New features and changes introduced in this version are

- “Generic Instrument Drivers Supported” on page 5
- “LeCroy Driver” on page 5
- “Agilent Instrument Simulations” on page 6

### Generic Instrument Drivers Supported

This release includes support for generic instrument drivers that allow the Instrument Control Toolbox to communicate with devices or software that do not use industry-standard drivers or protocols.

For more information, see “Using Generic Instrument Drivers” in the Instrument Control Toolbox documentation.

### LeCroy Driver

This release includes support for LeCroy instrument drivers.

Several drivers ship with the toolbox. You can find these drivers by looking in the directory

```
matlabroot\toolbox\instrument\instrument\drivers
```

where *matlabroot* is the MATLAB installation directory, as seen when you type

```
matlabroot
```

at the MATLAB command prompt.

Many other drivers are available on the MathWorks Web site at

<http://www.mathworks.com/matlabcentral/fileexchange>

including drivers specifically for the Instrument Control Toolbox under the Test and Measurement category.

## **Agilent Instrument Simulations**

The Instrument Control Toolbox includes simulations of the Agilent 33120a function generator and Agilent e3648 DC power supply. These simulations are available as instrument drivers.

You can see the drivers shipped with the release by looking in the directory

```
matlabroot\toolbox\instrument\instrument\drivers
```

where *matlabroot* is the MATLAB installation directory, as seen when you type

```
matlabroot
```

at the MATLAB command prompt.

The Agilent simulations are provided by the drivers

```
generic_agilent_33120a.mdd  
generic_agilent_e3648a.mdd
```

## Version 2.3 (R14SP3) Instrument Control Toolbox

This table summarizes what is new in Version 2.3 (R14SP3):

| <b>New Features and Changes</b> | <b>Version Compatibility Considerations</b> | <b>Fixed Bugs and Known Problems</b> | <b>Related Documentation at Web Site</b> |
|---------------------------------|---|--------------------------------------|--|
| No                              | No  | Bug Reports at Web site              | No                                       |

## Version 2.2 (R14SP2) Instrument Control Toolbox

This table summarizes what is new in Version 2.2 (R14SP2):

| <b>New Features and Changes</b> | <b>Version Compatibility Considerations</b> | <b>Fixed Bugs and Known Problems</b> | <b>Related Documentation at Web Site</b> |
|---------------------------------|---|--------------------------------------|--|
| Yes<br>Details below            | No  | Bug Reports<br>at Web site           | No                                       |

New features and changes introduced in this version are

- “Advantech GPIB Supported” on page 8

### **Advantech GPIB Supported**

Supported GPIB interfaces now include Advantech GPIB.

For further information, type

```
instrhelp gpib
```

## Version 2.1.2 (R14SP1+) Instrument Control Toolbox

This table summarizes what is new in Version 2.1.2 (R14SP1+):

| New Features and Changes | Version Compatibility Considerations | Fixed Bugs and Known Problems | Related Documentation at Web Site |
|--------------------------|--------------------------------------|-------------------------------|-----------------------------------|
| No                       | No                                   | Fixed bugs<br>Details below   | No                                |

Changes introduced in this version are

- “Major Bug Fixes” on page 9

### Major Bug Fixes

#### **instrhwinf and tmtool Show GPIB Boards**

In earlier versions of the toolbox, `instrhwinf` and the Test & Measurement Tool (`tmtool`) would not always show your available GPIB boards unless there were instruments connected to the boards and turned on. These functions now properly show the boards reported by the driver, regardless of whether instruments are connected and/or powered on.

#### **tmtool Logs Property Changes to Interface Objects**

In R14, the generated code in the session log for interface objects indicated that it included property changes to the object that were made in the Test & Measurement Tool (`tmtool`). These changes were not actually included in the generated code, but now they are included.

#### **Bug Fixes to tmtool**

A number of minor bugs in the Test & Measurement Tool (`tmtool`) have been fixed.

## Version 2.1 (R14SP1) Instrument Control Toolbox

This table summarizes what is new in Version 2.1 (R14SP1):

| New Features and Changes | Version Compatibility Considerations | Fixed Bugs and Known Problems | Related Documentation at Web Site |
|--------------------------|--------------------------------------|-------------------------------|-----------------------------------|
| Yes<br>Details below     | No                                   | Fixed bugs<br>Details below   | No                                |

New features and changes introduced in this version are

- “Instrument Control Toolbox Block Library Introduced” on page 10
- “Major Bug Fixes” on page 11

### Instrument Control Toolbox Block Library Introduced

The Instrument Control Toolbox includes a Simulink interface called the Instrument Control Toolbox block library. The new library includes two blocks:

- To Instrument
- Query Instrument

The blocks of the Instrument Control Toolbox block library provide an interface for sending live data from your Simulink model to an instrument, and for querying an instrument to receive live data into your model.

To open the Instrument Control Toolbox block library, enter

```
instrumentlib
```

at the MATLAB prompt.

For detailed information about each of the blocks, see “Blocks — Alphabetical List” in the Instrument Control Toolbox User’s Guide. For an introduction to the library with an example of how to use its blocks, see “Using the Instrument Control Toolbox Block Library” in the Instrument Control Toolbox documentation.

## **Major Bug Fixes**

### **Functions Failed for VXIplug&play and IVI-C Device Objects**

Built-in and device-specific device object functions, such as `connect` and `geterror`, would fail unexpectedly in Version 2.0 for device objects using *VXIplug&play* and IVI-C drivers. This bug has been fixed in Version 2.1.

## Version 2.0 (R14) Instrument Control Toolbox

This table summarizes what is new in Version 2.0 (R14):

| New Features and Changes | Version Compatibility Considerations | Fixed Bugs and Known Problems | Related Documentation at Web Site |
|--------------------------|--------------------------------------|-------------------------------|-----------------------------------|
| Yes<br>Details below     | No                                   | Fixed bugs<br>Details below   | No                                |

New features and changes introduced in this version are

- “Device Objects and Support for Instrument Drivers” on page 12
- “New Test & Measurement Tool — tmtool” on page 13
- “New MATLAB Instrument Driver Editor — midedit” on page 14
- “New MATLAB Instrument Driver Testing Tool — midtest” on page 14
- “GPIB Board ID and Constructor Returned by instrhwinfo” on page 15
- “TCP/IP and USB VISA Interfaces” on page 15
- “VISA Aliases” on page 15
- “CONTEC and ICS GPIB Supported” on page 16
- “New Instrument Object Property — ObjectVisibility” on page 16
- “Finding Hidden Objects — instrfindall” on page 16
- “New Interface for instrcreate and instrcomm” on page 16
- “Async Read/Write for Agilent VISA” on page 16
- “Major Bug Fixes” on page 16

### Device Objects and Support for Instrument Drivers

Device objects allow you to configure and query an instrument without having to learn the instrument’s command set.

You create a device object with the `icdevice` function. `icdevice` requires a MATLAB instrument driver as an argument. Depending on the exact type



of driver, you may also have to provide a resource name or interface object. Interface objects provide a connection to the interface associated with your instrument (GPIB, serial, and so on) and were referred to as instrument objects in previous versions of the toolbox. MATLAB instrument drivers are files that contain the instrument's command set. The following drivers are available.

| Driver           | Description                             |
|------------------|---|
| agilent_33120    | Agilent Technologies function generator |
| agilent_34401a   | Agilent Technologies multimeter         |
| agilent_e3648a   | Agilent Technologies power supply       |
| tektronix_tds210 | Tektronix TDS 210 oscilloscope          |

Note that you can create new instrument drivers and modify existing instrument drivers with the MATLAB Instrument Driver Editor.

### Device Object Functions

To list all the functions associated with device objects, type

```
instrhelp
```

In addition to new functions, existing toolbox functions have been updated to work with device objects.

### Device Object Properties

To list all the properties associated with device objects, type

```
instrhelp icdevice
```

### New Test & Measurement Tool – tmtool

Use the Test & Measurement Tool to configure and communicate with any hardware available to the Instrument Control Toolbox. This tool enables you to

- Search of available hardware and drivers
- Create instrument objects

- Configure instrument settings
- Connect to an instrument
- Write data to an instrument
- Read data from an instrument
- Save a log of your session as an M-file

For more information, see the `tmtool` reference page in the Instrument Control Toolbox User's Guide.

### **New MATLAB Instrument Driver Editor – `midedit`**

Use the MATLAB Instrument Driver Editor to create or modify MATLAB instrument drivers. This tool enables you to

- Add/remove/modify driver properties
- Add/remove/modify driver functions
- Define MATLAB code to wrap around commands sent to instrument by the driver
- Import IVI and VXIplug&play drivers to create MATLAB instrument drivers

For more information, see The Instrument Driver Editor in the Instrument Control Toolbox User's Guide.

### **New MATLAB Instrument Driver Testing Tool – `midtest`**

Use the MATLAB Instrument Driver Testing Tool to test your MATLAB instrument drivers. This tool enables you to

- Verify driver property behavior
- Verify driver function behavior
- Save the driver test as a test file, MATLAB code, or driver function
- Export the test results to the MATLAB workspace, figure window, MAT-file, or the MATLAB array editor

- Save test results as an HTML page

For more information, see The Instrument Driver Testing Tool in the Instrument Control Toolbox documentation.

## **GPIB Board ID and Constructor Returned by instrhwinfo**

The `instrhwinfo` function returns the GPIB board ID and the constructor syntax.

```
instrhwinfo('gpib','ni')

ans =
  AdaptorDllName: [1x69 char]
      AdaptorDllVersion: 'Version 2.0'
      AdaptorName: 'ni'
      InstalledBoardIds: 0
      ObjectConstructorName: {'gpib('ni', 0, 1);'}
      VendorDllName: 'gpib-32.dll'
      VendorDriverDescription: 'NI-488'
```

## **TCP/IP and USB VISA Interfaces**

TCP/IP and USB are now supported as VISA interfaces.

For further information, type

```
instrhelp visa
```

## **VISA Aliases**

Support has been added for VISA aliases. You can now assign an alias to a VISA resource name and use either the alias or the VISA resource name when constructing the object. To help with this, an `Alias` property has been added to all types of VISA objects.

For further information, type

```
instrhelp visa
```

## **CONTEC and ICS GPIB Supported**

Supported GPIB interfaces now include CONTEC GPIB and ICS USB GPIB.

For further information, type

```
instrhelp gpib
```

## **New Instrument Object Property – ObjectVisibility**

The `ObjectVisibility` property enables you to hide objects from command-line users. This is useful for application developers who do not want users of their applications to access the instrument objects created by the application. For more information, see the `ObjectVisibility` reference page in the Instrument Control Toolbox documentation.

## **Finding Hidden Objects – instrfindall**

The `instrfindall` function enables you to access instrument objects whose `ObjectVisibility` property is set to `off`. For more information, see the `instrfindall` reference page in the Instrument Control Toolbox documentation.

## **New Interface for instrcreate and instrcomm**

The `instrcreate` and `instrcomm` tools have been redesigned for Version 2.0. For more information, see the `instrcreate` and `instrcomm` reference pages in the Instrument Control Toolbox documentation.

## **Async Read/Write for Agilent VISA**

The Agilent VISA driver now supports the `async` flag for the `fprintf` and `fwrite` functions.

## **Major Bug Fixes**

### **Using Modal Dialog Box with Tek-VISA Adaptor**

When communicating with an instrument using the Tek-VISA adaptor, MATLAB no longer hangs if a modal dialog box is opened.

## **Compatibility Summary for Instrument Control Toolbox**

There are no compatibility concerns when upgrading from any versions between 2.0 and 2.4.1